Sandia National Laboratories

Operated for the U.S. Department of Energy by
Sandia Corporation

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CAREER OPPORTUNITIES in Optimization and Uncertainty Quantification

The following positions are currently available in the Optimization and Uncertainty Estimation Department at Sandia National Laboratories:

Software Developer: Development skills in the following areas are sought: C++ software development, object-oriented design for software frameworks and libraries, and familiarity with UNIX/Linux compilers/operating systems, configure/make processes, and code version control systems (e.g., CVS). The following skills are also desirable: distributed memory scientific computing (e.g., MPI), numerical methods (e.g., BLAS, LAPACK), JAVA software development and GUI design, and familiarity with software SQA processes such as issue tracking, requirements management, and unit/regression testing.

Algorithm Researcher in Uncertainty Quantification and Optimization Under Uncertainty: Sandia National Labs applies optimization to designs whose response is modeled by complex multi-physics simulations involving up to several million degrees of freedom. The next great leap in analysis fidelity is incorporating uncertainty into these already-difficult simulations. Sandia offers a unique set of challenging application problems for the researcher interested in the general areas of uncertainty quantification (including sampling, reliability, and other stochastic methods) and optimization under uncertainty (including robust and reliability-based design for uncertain models). There is the opportunity to help define the future role of stochastic design at Sandia.

Sandia's Optimization and Uncertainty Estimation department has unique expertise in the areas of simultaneous analysis and design, multi-level parallel optimization, surrogate-based optimization, and optimization under uncertainty. The department partners with other organizations within Sandia that specialize in discrete optimization, stochastic methods, and validation and verification of software codes. The department has dozens of partnerships with world-class universities.

The department is well known for its DAKOTA toolkit, available as open-source under GNU GPL license. One of the emerging themes for the department is to deploy optimization and uncertainty quantification techniques using DAKOTA across Sandia's simulation-based design and analysis enterprise, and into selected private companies. People with an interest in partnering with application software developers and users to incorporate optimization and uncertainty estimation techniques into their processes are sought.

Sandia is a world leader in large-scale parallel computer systems, algorithms, software and applications. Sandia has a unique parallel computing environment, including some of the top supercomputers in the world (e.g. the 9000-processor 3.1-TeraFLOPS ASCI Red machine), and many smaller research machines. Staff members work in a collaborative and highly multidisciplinary environment. Sandia values and rewards technical excellence and leadership. Sandia offers a stable work environment, and the opportunity to solve some of the world's most challenging and important computational problems. See http://www.sandia.gov, http://www.cs.sandia.gov/, and http://endo.sandia.gov/DAKOTA/ for more information.

Applicants should have completed a B.S., M.S., or Ph.D. in computer science, engineering, mathematics, statistics, or operations research, and have academic or work experience specializing in the targeted areas. The proven ability to work in a collaborative, multi-disciplinary research environment is desired.

Applicants should send a resume, a statement of research interests, and the names of three references to Scott Mitchell; see letterhead for address. Electronic applications are preferred. Sandia has facilities in Albuquerque, NM and Livermore, CA. Sandia offers attractive compensation packages that are competitive with industry leaders. Sandia is an Equal Opportunity Employer. U.S. citizenship is normally required.